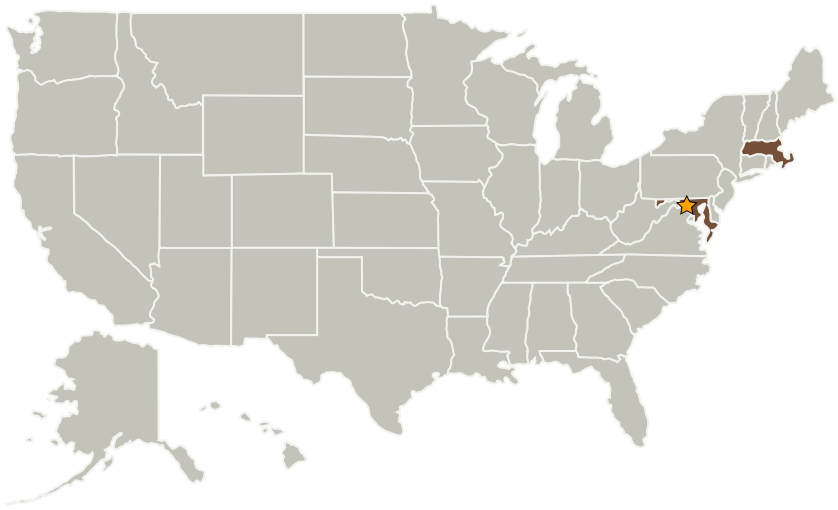
10-100 Gbps Offload NIC for WAN, NLR, Grid Computing, Phase I

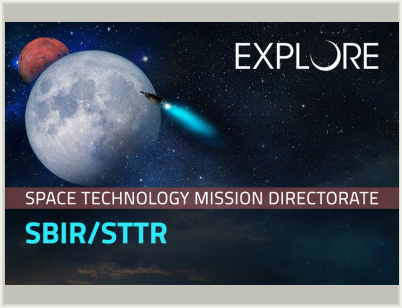
Completed Technology Project (2007 - 2007)

Project Introduction

This Phase 1 proposal addresses the 2006 NASA SBIR Research Topic S8.05 Science Data Management and Visualization (GSFC). The subtopic we address is Distributed Data Management and Access: Dynamically configurable high speed access to data distributed and shared over wide area high speed network environments. We propose a novel offload engine NIC, with network connections scaling at n x 10Gbps increments. The application is for present (10Gbps) and next generation NASA and commercial cluster and grid computing systems requiring ultra high-speed, low-cost offload engines with rates ranging from 10 through future rates of 100 Gbps full-duplex. Successful completion of this Phase 1 project will prove feasibility of our innovation through architectural models, ultra high-speed logic simulations, and experimental results. Deliverables include system on chip core IP, initial firmware, and feasibility results showing UDP/IP from 10 - 100 Gbps full-duplex, and the maximum bandwidth for a variant of TCP/IP. We will also have the system design for our Phase 2 prototype system. Using a 10 Gbps NPU development system, we conduct a preliminary demonstration of offload engine performance.

Primary U.S. Work Locations and Key Partners





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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Goddard Space Flight Center (GSFC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland
SeaFire Micros, Inc.	Supporting Organization	Industry	Beverly, Massachusetts

Primary U.S. Work Locations	
Maryland	Massachusetts

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
  - TX06.2 Extravehicular Activity Systems
    - TX06.2.3 Informatics and Decision Support Systems